Instructions-Parts

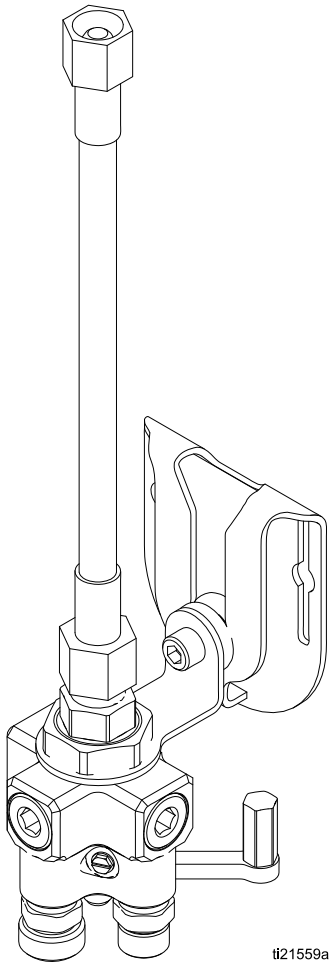
Mix Manifold Kit

3A2801D
EN

For at-the-gun mixing of 2 component materials when used with a ProMix™ PD2K Proportioner.
For professional use only.

Important Safety Instructions
Read all warnings and instructions in this manual and in your PD2K proportioner manual.
Save these instructions.

See page 2 for model part numbers, maximum fluid working pressure, and approvals.



ti21559a

PROVEN QUALITY. LEADING TECHNOLOGY.

Models

Part No.	Series	Description	Maximum Fluid Working Pressure
24R991	A	Low Pressure Mix Manifold	300 psi (2.1 MPa, 21 bar)
24R992	A	High Pressure Mix Manifold	1500 psi (10.5 MPa, 105 bar)
24T273	A	High Pressure Mix Manifold, for acid-catalyzed materials	1500 psi (10.5 MPa, 105 bar)

CE

II 2 G c IIA T6

Warnings

The following warnings are for the setup, use, grounding, maintenance and repair of this equipment. The exclamation point symbol alerts you to a general warning and the hazard symbol refers to procedure-specific risks. When these symbols appear in the body of this manual or on warning labels, refer back to these Warnings. Product-specific hazard symbols and warnings not covered in this section may appear throughout the body of this manual where applicable.

⚠ WARNING

FIRE AND EXPLOSION HAZARD

Flammable fumes, such as solvent and paint fumes, in **work area** can ignite or explode. To help prevent fire and explosion:

- Use equipment only in well ventilated area.
- Eliminate all ignition sources; such as pilot lights, cigarettes, portable electric lamps, and plastic drop cloths (potential static arc).
- Keep work area free of debris, including solvent, rags and gasoline.
- Do not plug or unplug power cords, or turn power or light switches on or off when flammable fumes are present.
- Ground all equipment in the work area. See **Grounding** instructions.
- Use only grounded hoses.
- Hold gun firmly to side of grounded pail when triggering into pail. Do not use pail liners unless they are antistatic or conductive.
- **Stop operation immediately** if static sparking occurs or you feel a shock, Do not use equipment until you identify and correct the problem.
- Keep a working fire extinguisher in the work area.

SKIN INJECTION HAZARD

High-pressure fluid from gun, hose leaks, or ruptured components will pierce skin. This may look like just a cut, but it is a serious injury that can result in amputation. **Get immediate surgical treatment.**

- Do not spray without tip guard and trigger guard installed.
- Engage trigger lock when not spraying.
- Do not point gun at anyone or at any part of the body.
- Do not put your hand over the spray tip.
- Do not stop or deflect leaks with your hand, body, glove, or rag.
- Follow the **Pressure Relief Procedure** when you stop spraying/dispensing and before cleaning, checking, or servicing equipment.
- Tighten all fluid connections before operating the equipment.
- Check hoses and couplings daily. Replace worn or damaged parts immediately.

⚠ WARNING

TOXIC FLUID OR FUMES

Toxic fluids or fumes can cause serious injury or death if splashed in the eyes or on skin, inhaled, or swallowed.

- Read MSDSs to know the specific hazards of the fluids you are using.
- Store hazardous fluid in approved containers, and dispose of it according to applicable guidelines.
- Always wear chemically impermeable gloves when spraying, dispensing, or cleaning equipment.

PERSONAL PROTECTIVE EQUIPMENT

Wear appropriate protective equipment when in the work area to help prevent serious injury, including eye injury, hearing loss, inhalation of toxic fumes, and burns. This protective equipment includes but is not limited to:

- Protective eyewear, and hearing protection.
- Respirators, protective clothing, and gloves as recommended by the fluid and solvent manufacturer.

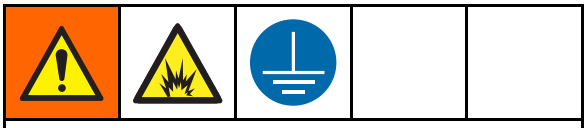
EQUIPMENT MISUSE HAZARD

Misuse can cause death or serious injury.

- Do not operate the unit when fatigued or under the influence of drugs or alcohol.
- Do not exceed the maximum working pressure or temperature rating of the lowest rated system component. See **Technical Data** in all equipment manuals.
- Use fluids and solvents that are compatible with equipment wetted parts. See **Technical Data** in all equipment manuals. Read fluid and solvent manufacturer's warnings. For complete information about your material, request MSDS from distributor or retailer.
- Do not leave the work area while equipment is energized or under pressure.
- Turn off all equipment and follow the **Pressure Relief Procedure** when equipment is not in use.
- Check equipment daily. Repair or replace worn or damaged parts immediately with genuine manufacturer's replacement parts only.
- Do not alter or modify equipment. Alterations or modifications may void agency approvals and create safety hazards.
- Make sure all equipment is rated and approved for the environment in which you are using it.
- Use equipment only for its intended purpose. Call your distributor for information.
- Route hoses and cables away from traffic areas, sharp edges, moving parts, and hot surfaces.
- Do not kink or over bend hoses or use hoses to pull equipment.
- Keep children and animals away from work area.
- Comply with all applicable safety regulations.

Installation

1. Connect the component A supply to the A side fitting (19a) of the mix manifold.
2. Connect the component B supply to the B side fitting (19b) of the mix manifold.
3. Connect the solvent supply to the solvent fitting (20) of the mix manifold.
4. Connect the static mixer hose (106) to the gun whip hose.



This equipment must be grounded to reduce the risk of static sparking. Static sparking can cause fumes to ignite or explode. Grounding provides an escape wire for the electric current.

5. Connect the ground wire (105) to the ground screw (23). Connect the other end of the ground wire to a true earth ground.

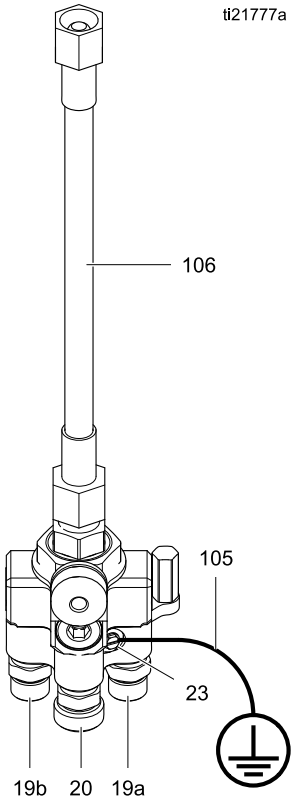


Figure 1 Mix Manifold

Operation

1. Check that all hose connections are tight before each use.
2. To spray, move the lever (16) to the ◀▶ (SPRAY) position. Components A and B will enter the mix manifold and be mixed by the mix nozzle (10) and the static mixer tube (106).
3. To flush, move the lever (16) to the ▶ (FLUSH) position. Solvent will flush the mix manifold, static mixer, and gun.
4. To shut down, flush the mix manifold and relieve pressure as described in the PD2K operation manual. Always leave the mix manifold lever in the ▶ (FLUSH) position when not in use.

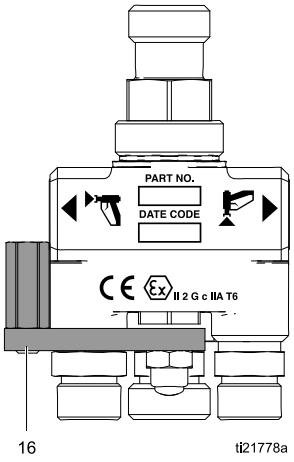


Figure 2 Mix Manifold Set to Spray

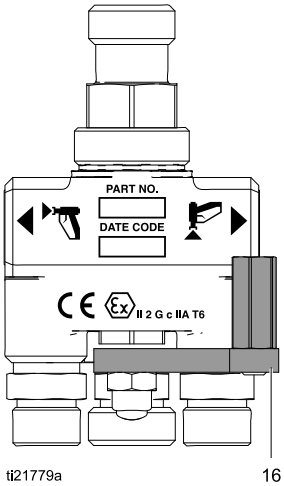


Figure 3 Mix Manifold Set to Flush

Repair

Disassembly

1. Flush the mix manifold before servicing. See the PD2K operation manual.
2. Relieve the pressure as described in the PD2K operation manual. Disconnect the hoses, taking note of which port (A or B) they are connected to.
3. Unscrew a plug (15) from the manifold body (1). Remove and discard the seal (22) each time a plug is removed. Inspect the seat (12) and o-rings (13, 14). Replace if damaged.
4. Repeat for the other two plugs (15).
5. Unscrew the outlet fitting (11). Remove the o-ring (9), bearing (8), mix nozzle (10), and stem ball (6).

   NOTE: When removing the A and B check valves (19), note which is from the A side and which is from the B side.
6. Unscrew the check valves (19, 20).
7. Unscrew the packing nut (5). Remove the valve stem (4), backup washers (3), and o-ring (2).
8. Unscrew the nut (17). Remove the lever (16).

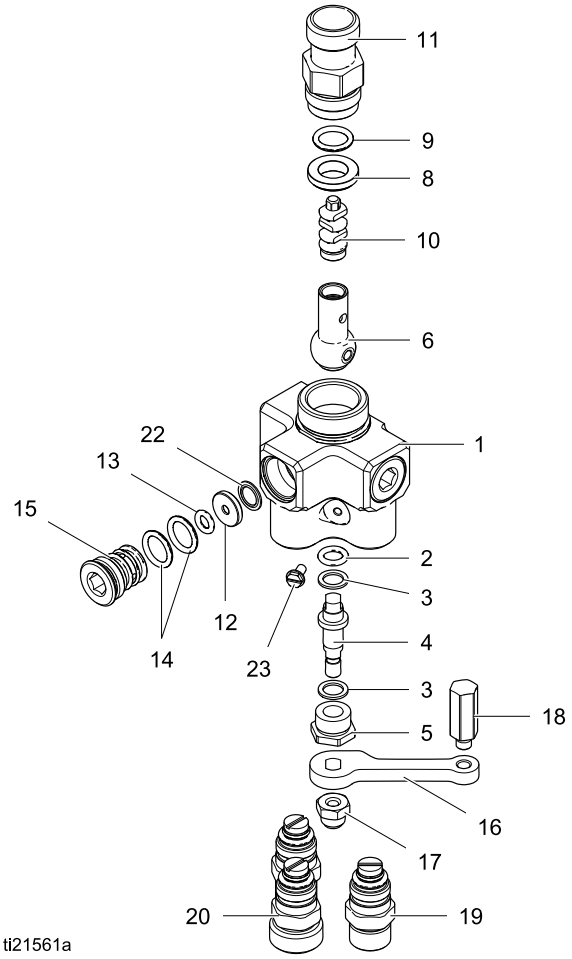


Figure 4 Mix Manifold Repair

Reassembly

NOTE: Lubricate all o-rings when reassembling.

Plug Seals Repair Kit 420011 is available. Parts included in the kit are marked with an asterisk, for example (12*). Order the kit separately.

Lever Seals Repair Kit 420012 is available. Parts included in the kit are marked with a symbol, for example (2◆). Order the kit separately.

Outlet Seals Repair Kit 420013 is available. Parts included in the kit are marked with a symbol, for example (8†). Order the kit separately.

Ball Repair Kit 24T752 is available. Parts included in the kit are marked with a symbol, for example (6‡). Order the kit separately.

1. Install the backup washers (3◆) and o-ring (2◆) on the valve stem (4). Insert the stem into the body (1).
2. Screw the packing nut (5) into the body (1) so it bottoms on the shoulder. Install the lever (16) and nut (17) so the notch (N) in the lever faces the B side, as shown.

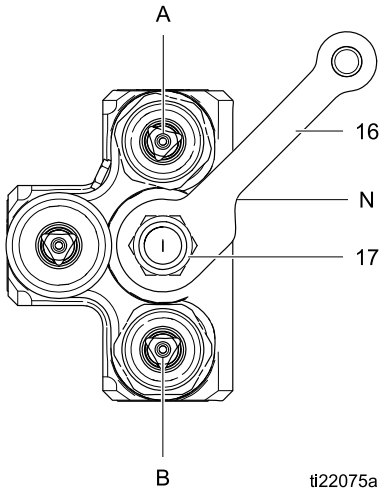


Figure 5 Lever Orientation

3. Move the lever to the SPRAY position. Install the stem ball (6) in the manifold body (1) so the small hole on one side of the stem is facing the side of the body marked SPRAY (A). The ball must engage with the valve stem (4).
4. Install the bearing (8†) and o-ring (9†). Insert the mix nozzle (10) into the stem ball (6) so it bottoms on the shoulder. **Loosely** screw the outlet fitting (11) into the body (1).
5. Apply thread adhesive to the check valves (19, 20). Be sure to install the A and B check valves (19) in the correct ports, as noted under **Disassembly**.
6. Check that the lever (16) is in the SPRAY position. This positions the ball stem (6) so the smooth rounded surface is facing the solvent port. Proper positioning is important to ensure that the seal (22) conforms properly against the ball.
7. Apply a small amount of fluid compatible grease to the seat (12) and seal (22). Install them in the solvent plug port, with the beveled side of the seat (12) facing in, toward the ball (6).
8. Install the o-rings (13*, 14*) on the solvent plug (15) and screw the plug into the solvent port securely.
9. Move the lever (16) to the FLUSH position. This positions the ball stem (6) so the smooth rounded surface is facing the A and B ports. Repeat steps 7 and 8 for the A and B plugs.

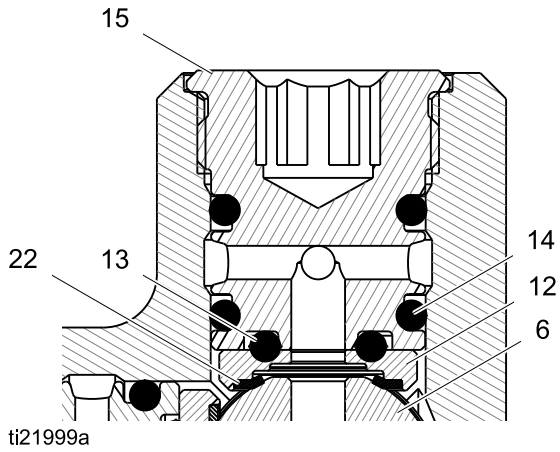


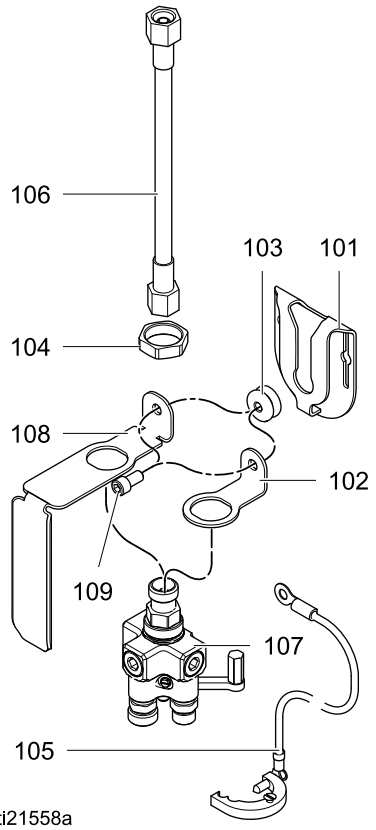
Figure 6 Detail of Seal and Seat Assembly

10. When all three plugs (15) are installed, tighten the outlet fitting (11).
11. Reconnect the hoses, A to A and B to B. Reconnect the solvent hose.
12. Return the mix manifold to service.

Parts

Mix Manifold Kit Parts

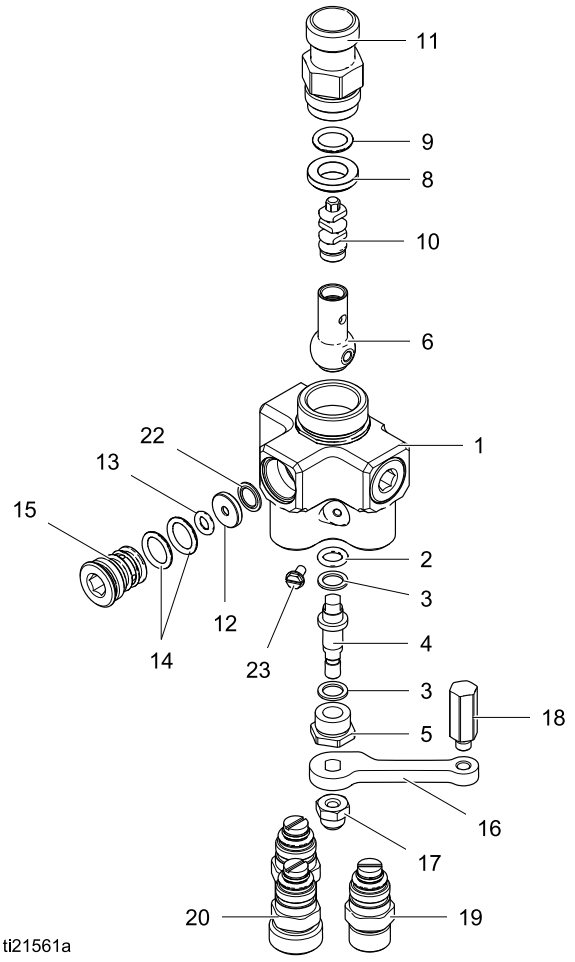
Part No. 24R991 Low Pressure Mix Manifold Kit
Part No. 24R992 High Pressure Mix Manifold Kit
Part No. 24T273 High Pressure Mix Manifold Kit, for acid catalyzed materials



Ref. No.	Part No.	Description	Qty
101	16W557	BRACKET, belt	1
102	16W558	BRACKET, gun/belt	1
103	16W559	RETAINER, bracket	1
104	16W560	NUT, retaining	1
105	16W562	WIRE, ground; 25 ft (7.6 m)	1
106	16W564	HOSE, static mixer; low pressure; for 24R991; 3/8 npsm (fbe); 9.25 in. (235 mm) long	1
	16W563	HOSE, static mixer; high pressure; for 24R992; 3/8 npsm x 1/4 npsm (fbe); 8.0 in. (203 mm) long	1
	24V437	HOSE, PTFE, static mixer, low pressure; for 24R991, 3/8 npsm(fbe), 11.7 in (297 mm) long; Includes:	1
	597350	TUBE, PTFE, 8 in (203 mm)	1
	510198	ELEMENT, mixer	3
	513832	FITTING, straight, 3/8 T x 3/8 npt, SST	2
	207152	FITTING, swivel, 3/8 npt x 3/8 npsm, SST	2
107	16W556	MANIFOLD, mix; for 24R991	1
	17A439	MANIFOLD, mix, for 24R992	1
	16W616	MANIFOLD, mix; for 24T273	1
108	16W561	HANDLE, mix manifold	1
109	101550	SCREW, cap, socket head; 1/4–20 x 0.5 in. (13 mm)	1

Mix Manifold Parts

Part No. 16W556 Mix Manifold (used on 24R991 Kit)
Part No. 17A439 Mix Manifold (used on 24R992 Kit)
Part No. 16W616 Mix Manifold (used on 24T273 Kit for acid-catalyzed materials)



Ref. No.	Part No.	Description	Qty
1	— — —	BODY, manifold	1
2◆	— — —	O-RING; PTFE	1
3◆	— — —	WASHER, backup; acetal	2
4	178745	STEM, valve, ball	1
5	165964	NUT, packing	1
6‡	— — —	BALL, stem	1
8†‡	— — —	BEARING, guide; acetal	1
9†‡	111457	O-RING; PTFE	1
10‡	— — —	NOZZLE, mix	1
11	16W554	FITTING, outlet; 3/8 npsm(m)	1
12*‡	— — —	SEAT, ball; PEEK	3
13*‡	112319	O-RING; chemically resistant	3
14*‡	121399	O-RING; chemically resistant	6
15	16W551	PLUG; for 16W556	3
	24T874	PLUG; for 16W616	3
16	24T838	LEVER	1
17	102310	NUT, hex; 10–32	1
18	— — —	HANDLE, lever	1
19	See chart	VALVE, check; 1/4 npsm	See chart
20		VALVE, check; 3/8 npsm	
22*‡	— — —	SEAL, ball; PPS	3
23	112506	SCREW, ground; 4–40 x 0.25 in. (6 mm)	1

* These parts are included in Plug Seals Repair Kit 420011, which must be ordered separately.

◆ These parts are included in Lever Seals Repair Kit 420012, which must be ordered separately.

† These parts are included in Outlet Seals Repair Kit 420013, which must be ordered separately.

‡ These parts are included in Ball Repair Kit 24T752, which must be ordered separately.

Parts labeled — — — are not available separately.

Quantity of Each Check Valve

Mix Manifold	16W461, Ref. 19	16W462, Ref. 19	16W463, Ref. 20
16W556	0	2	1
17A439	0	3	0
16W616	1 (installed in “B” side)	2	0

Accessories

Part No.	Description
24N641	1/8 in. (3 mm) ID Fluid Whip Hose; nylon; 6 ft (1.8 m); for high and low pressure applications. 3200 psi (22 MPa, 220 bar) Maximum Fluid Working Pressure.
24N305	1/4 in. (6 mm) ID Fluid Whip Hose; nylon; 6 ft (1.8 m); for low pressure applications only. 225 psi (1.6 MPa, 16 bar) Maximum Fluid Working Pressure.
24N348	1/4 in. (6 mm) ID Fluid Whip Hose; ptfe; 6 ft (1.8 m); for high pressure applications only. 3000 psi (20.7 MPa, 207 bar) Maximum Fluid Working Pressure.
24T753	Acid Catalyst Conversion Kit. To convert a 16W556 standard mix manifold to a 16W616 mix manifold for use with acid-catalyzed materials.
24T873	Fluid Outlet Quick Disconnect Kit. Replaces the manifold's fluid outlet fitting to allow quick-disconnect of the static mixer hose.
24U059	5/16 in. (8 mm) ID Grounded Air Whip Hose, for use with electrostatic guns; 1/4 npsm(f) x 1/4 npsm (f) left–hand thread; 6 ft (1.8 m). 100 psi (0.7 MPa, 7 bar) Maximum Air Working Pressure.
16F537	5/16 in. (8 mm) ID Air Whip Hose, for use with conventional air spray guns; 1/4 npsm(f); 6 ft (1.8 m). 200 psi (1.4 MPa, 14 bar) Maximum Air Working Pressure.
24S004	Air Line Quick Disconnect, for use with electrostatic guns.

Technical Data

Mix Manifold	U.S.	Metric
Maximum fluid working pressure:		
24R991 Low Pressure Mix Manifold	300 psi	2.1 MPa, 21 bar
24R992 High Pressure Mix Manifold	1500 psi	10.5 MPa, 105 bar
24T273 High Pressure Mix Manifold, for acid-catalyzed materials	1500 psi	10.5 MPa, 105 bar
Mixing ratio range:	0.1:1 — 50:1, ±1%	
Fluid outlet size (static mixer):	3/8 npt(f)	
Weight (approximate):	1.25 lb	0.57 kg
Wetted parts:		
16W556 Mix Manifold	302, 303, 316, and 17–4PH SST, perfluoroelastomer; PEEK, PTFE, CV-75	
16W616 Mix Manifold, for acid-catalyzed materials	302, 316, and 17–4PH SST, perfluoroelastomer; PEEK, PTFE, CV-75	

Graco Standard Warranty

Graco warrants all equipment referenced in this document which is manufactured by Graco and bearing its name to be free from defects in material and workmanship on the date of sale to the original purchaser for use. With the exception of any special, extended, or limited warranty published by Graco, Graco will, for a period of twelve months from the date of sale, repair or replace any part of the equipment determined by Graco to be defective. This warranty applies only when the equipment is installed, operated and maintained in accordance with Graco's written recommendations.

This warranty does not cover, and Graco shall not be liable for general wear and tear, or any malfunction, damage or wear caused by faulty installation, misapplication, abrasion, corrosion, inadequate or improper maintenance, negligence, accident, tampering, or substitution of non-Graco component parts. Nor shall Graco be liable for malfunction, damage or wear caused by the incompatibility of Graco equipment with structures, accessories, equipment or materials not supplied by Graco, or the improper design, manufacture, installation, operation or maintenance of structures, accessories, equipment or materials not supplied by Graco.

This warranty is conditioned upon the prepaid return of the equipment claimed to be defective to an authorized Graco distributor for verification of the claimed defect. If the claimed defect is verified, Graco will repair or replace free of charge any defective parts. The equipment will be returned to the original purchaser transportation prepaid. If inspection of the equipment does not disclose any defect in material or workmanship, repairs will be made at a reasonable charge, which charges may include the costs of parts, labor, and transportation.

THIS WARRANTY IS EXCLUSIVE, AND IS IN LIEU OF ANY OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO WARRANTY OF MERCHANTABILITY OR WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

Graco's sole obligation and buyer's sole remedy for any breach of warranty shall be as set forth above. The buyer agrees that no other remedy (including, but not limited to, incidental or consequential damages for lost profits, lost sales, injury to person or property, or any other incidental or consequential loss) shall be available. Any action for breach of warranty must be brought within two (2) years of the date of sale.

GRACO MAKES NO WARRANTY, AND DISCLAIMS ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, IN CONNECTION WITH ACCESSORIES, EQUIPMENT, MATERIALS OR COMPONENTS SOLD BUT NOT MANUFACTURED BY GRACO. These items sold, but not manufactured by Graco (such as electric motors, switches, hose, etc.), are subject to the warranty, if any, of their manufacturer. Graco will provide purchaser with reasonable assistance in making any claim for breach of these warranties.

In no event will Graco be liable for indirect, incidental, special or consequential damages resulting from Graco supplying equipment hereunder, or the furnishing, performance, or use of any products or other goods sold hereto, whether due to a breach of contract, breach of warranty, the negligence of Graco, or otherwise.

FOR GRACO CANADA CUSTOMERS

The Parties acknowledge that they have required that the present document, as well as all documents, notices and legal proceedings entered into, given or instituted pursuant hereto or relating directly or indirectly hereto, be drawn up in English. Les parties reconnaissent avoir convenu que la rédaction du présente document sera en Anglais, ainsi que tous documents, avis et procédures judiciaires exécutés, donnés ou intentés, à la suite de ou en rapport, directement ou indirectement, avec les procédures concernées.

Graco Information

For the latest information about Graco products, visit www.graco.com.

To place an order, contact your Graco Distributor or call to identify the nearest distributor.

Phone: 612-623-6921 **or Toll Free:** 1-800-328-0211 **Fax:** 612-378-3505

All written and visual data contained in this document reflects the latest product information available at the time of publication.

Graco reserves the right to make changes at any time without notice.

For patent information, see www.graco.com/patents.

Original Instructions. This manual contains English. MM 3A2801

Graco Headquarters: Minneapolis

International Offices: Belgium, China, Japan, Korea

GRACO INC. AND SUBSIDIARIES • P.O. BOX 1441 • MINNEAPOLIS MN 55440-1441 • USA

Copyright 2013, Graco Inc. All Graco manufacturing locations are registered to ISO 9001.

www.graco.com
Revision D, July 2014